

Mitsuru SHINGYOHUCHI et al., S.N. 10/561,303  
Page 2

Dkt. 2271/75606  
**RECEIVED**  
CENTRAL FAX CENTER

**JUN 16 2008**

**Listing of Claims**

The following listing of claims will replace all prior versions, and listings, of claims in the subject application:

1. (currently amended) An image formation apparatus capable of forming a relatively large ink drop by sequentially discharging a plurality of ink drops from an ink drop discharging head, ~~the sequential ink drops merging before reaching a print target medium,~~ the image formation apparatus comprising:

pressure generating means for discharging one or more of the sequential ink drops other than an ink drop that is not followed by any more of the ink drops in a given printing cycle (the last ink drop) at an interval ~~nearly~~ substantially equal to  $(n+1/2) \times T_c$ ,

wherein the interval at which said one or more of the sequential ink drops is discharged in said given printing cycle is substantially equal to  $(n \times T_c) + (T_c / 2)$  such that the sequential ink drops merge before reaching a print target medium,

where n is an integer equal to or greater than 1, and  $T_c$  represents a resonance cycle of a pressurized ink chamber of the image formation apparatus, the interval being measured from when a corresponding preceding ink drop is discharged.

2. (currently amended) The image formation apparatus as claimed in claim 1, wherein the one or more of the ink drops other than the last ink drop are discharged at an interval ~~nearly~~ substantially equal to  $1.5 \times T_c$ .

3. (currently amended) The image formation apparatus as claimed in claim 1, wherein ink

Mitsuru SHINGYOHUCHI et al., S.N. 10/561,303  
Page 3

Dkt. 2271/75606

drops other than the one or more ink drops that are discharged at an interval ~~nearly~~ substantially equal to  $(n+1/2) \times T_c$  are discharged at an interval ~~nearly~~ substantially equal to  $n \times T_c$ .

4. (original) The image formation apparatus as claimed in claim 1, wherein a first ink drop is discharged by the pressurized ink chamber being contracted after being expanded, where a volume of contraction is greater than a volume of expansion, and where the volume of expansion may take a positive value or zero.

5. (currently amended) The image formation apparatus as claimed in claim 4, wherein a second ink drop is discharged at an interval ~~nearly~~ substantially equal to  $(n+1/2) \times T_c$  from the first ink drop that precedes the second ink drop.

6. (currently amended) The image formation apparatus as claimed in claim 1, wherein a speed of one of the ink drops (the ink drop speed  $V_j$ ) discharged at the interval ~~nearly~~ substantially equal to  $(n+1/2) \times T_c$  from the preceding ink drop is set at greater than three m/s, and at a speed at which the sequential ink drops are merged.

7. (original) The image formation apparatus as claimed in claim 1, wherein four or more of the sequential ink drops merge during flight to form one of the relatively large ink drops.

8. (original) The image formation apparatus as claimed in claim 1, wherein a waveform containing driving pulses for discharging the sequential ink drops includes a waveform for suppressing a residual vibration after a driving pulse for discharging the last ink drop.

Mitsuru SHINGYOHUCHI et al., S.N. 10/561,303  
Page 4

Dkt. 2271/75606

9. (original) The image formation apparatus as claimed in claim 8, wherein the waveform for suppressing the residual vibration is provided within an elapsed time equivalent to  $T_c$  after the last ink drop is discharged.

10. (original) The image formation apparatus as claimed in claim 1, wherein a medium-sized ink drop and a small-sized ink drop are each formed by selecting a part of driving pulses for forming the relatively large ink drop.

11. (original) The image formation apparatus as claimed in claim 10, wherein the driving pulses include a waveform for vibrating a meniscus without causing an ink drop to be discharged.

12. (original) The image formation apparatus as claimed in claim 10, wherein the driving pulses include a section wherein a voltage is applied to the pressure generating means for pressurizing ink in the pressurized ink chamber.

13. (original) The image formation apparatus as claimed in claim 12, wherein the pressure generating means is a piezoelectric device, and the piezoelectric device is recharged in the section wherein said voltage is applied.

14. (original) The image formation apparatus as claimed in claim 1, wherein the pressure generating means for generating the pressure for pressurizing the ink of the pressurized ink

Mitsuru SHINGYOHUCHI et al., S.N. 10/561,303  
Page 5

Dkt. 2271/75606

chamber is a piezoelectric device, a displacement direction of which is d33.

15. (original) The image formation apparatus as claimed in claim 14, wherein support sections of the piezoelectric device support partitions of the pressurized ink chamber.

16. (new) The image formation apparatus as claimed in claim 1, wherein additional ink drops other than the one or more ink drops that are discharged at an interval substantially equal to  $(n+1/2) \times T_c$  are discharged at an interval substantially equal to  $n \times T_c$ , and said additional ink drops merge with the one or more ink drops that are discharged at an interval nearly equal to  $(n+1/2) \times T_c$ .

17. (new) The image formation apparatus as claimed in claim 1, wherein a predetermined interval between first and second ink drops of the sequential ink drops is substantially equal to  $1.5 \times T_c$  such that the first and second ink drops merge before reaching a print target medium,